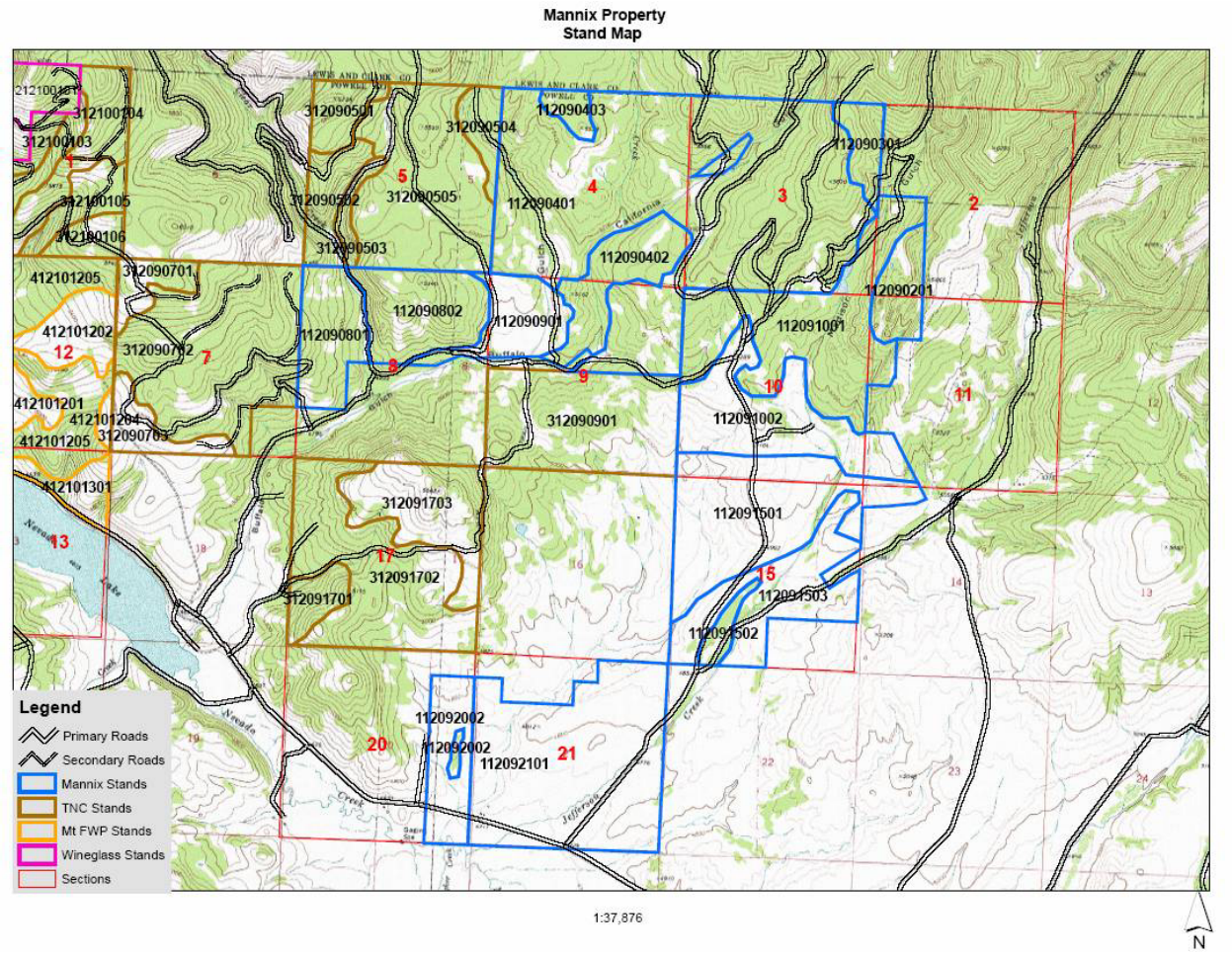
Subject Area Map



washouts and sedimentation from poor road drainage. Stream crossings and forest roads should be periodically monitored especially prior to spring runoff when high flows are most likely.

Adherence to Forestry Best Management Practices and installation of Streamside Management Zones during timber harvesting activities will significantly reduce the potential for sedimentation.

The health and condition of streamside vegetation should be evaluated periodically. Healthy riparian and wetland areas filter sediments from surface runoff, stabilize stream banks and help to reduce impacts associated with floods. Streamside vegetation also provides shade to maintain cool water temperatures. Many fish species, especially trout, become stressed as water temperatures rise during summer months. Livestock grazing management practices should maintain or improve the abundance and vigor of grasses, forbs, shrubs and trees in riparian and wetland areas. Fencing may be required where vegetation is lacking or in poor condition to exclude livestock and allow natural recovery of native plants.

Forest Identification and Evaluation

Forestlands on the ownership were initially delineated into forest stands utilizing 2005 National Agriculture Imagery Program (NAIP) aerial photography. Forest stand boundaries were reviewed during a field reconnaissance conducted in June and July of 2006.

Stand delineation is used to stratify the forest ownership for inventory purposes. Forest inventory data is collected in the field to produce detailed information on the stand attributes for each stand type. An analysis of stand level forest inventory data is completed to develop practical forest management alternatives for each forest stand type. Forest inventory data provides specific information regarding tree species composition, tree-stocking rates by size class, basal area, and merchantable timber volume.

Size class descriptions include seedling, sapling, pole, small sawtimber, medium sawtimber, and large sawtimber. For purposes of forest stand classification seedlings are defined as trees between 1 and 4.5 feet in height. Saplings are trees greater than 4.5 feet in height and less than 5 inches in diameter. Poles are trees with a diameter at breast height (DBH) of 5 to 7 inches. Small sawlogs have a DBH of 8 to 11 inches. Medium sawlogs have a DBH of 12 to 15 inches. Large sawlogs exceed 15 inches DBH.

Example: DF2M (**DF** means Douglas-fir is the dominant species, **2** means pole size trees are the dominant tree size class and **M** means the stocking rate is 75- 150 poles/small sawlogs per acre and <2.0 net mbf (mbf = 1,000 board feet) per acre

The legal description, acres and cover photo type for each forest stand is identified in the following tables.

ID Code	***Dominant Species***
DF	Douglas-fir
PP	Ponderosa pine
LP	Lodgepole pine

SA	Subalpine fir
SP	Engelmann Spruce
CX	Mixed Conifer
HW	Hardwood

ID Code	***Dominant Size Class***
1	Seedling/Sapling – (fewer than 100 trees per acre (tpa) in pole and sawlog size classes)
2	Pole/Small Sawlog - (greater than 100 tpa in pole and sawlog size classes)
3	Medium-Large Sawtimber – (greater than 75 tpa per acre in sawlog size classes)

ID Code	***Stocking Rate***
	Seedling/Sapling Stand
P	0-500 seedlings/saplings per acre
M	500-1,000 seedlings/saplings per acre
W	greater than 1000 seedlings/saplings per acre
	Pole/Small Sawlog Stand
P	1-74 pole/small sawlogs per acre and <0.5 net mbf (mbf = 1,000 board feet) per acre.
M	75- 150 poles/small sawlogs per acre and <2.0 net mbf per acre.
W	Greater than 150 poles/small sawlogs per acre and <2.0 net mbf per acre Medium to Large Sawtimber
	Medium to large Sawlog Stand
P	0.1-1.9 net mbf per acre
M	2.0-3.5 net mbf per acre
W	greater than 3.5 net mbf per acre

The following table summarizes delineated stand locations. Representative acres for each stand are provided by ownership.

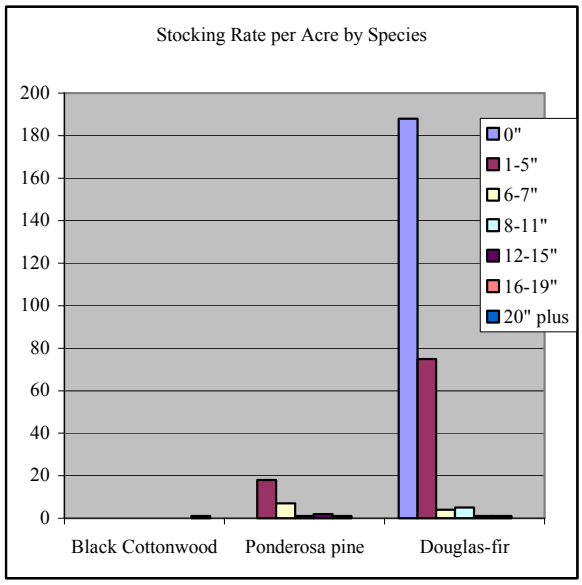
Owner	Stand	Section	Township	Range	Acres	Stand Type
Mannix	112090201	2	12	9	84.6	DF2P
Mannix	112090301	3	12	9	59.7	DF1M
Mannix	112090401	3 and 4	12	9	1,208.7	DF1P
Mannix	112090402	4	12	9	151.8	DF1M
Mannix	112090403	4	12	9	32.2	LP1P
Mannix	112090801	8	12	9	147.8	DF1P
Mannix	112090802	8	12	9	183.5	DF1P
Mannix	112090901	9	12	9	127.6	Range
Mannix	112091001	10	12	9	407.8	DF3M
Mannix	112091002	10	12	9	279.6	Range
Mannix	112091502	15	12	9	29.9	HX2P
Mannix	112091503	15	12	9	231.9	PP1P
Mannix	112092001	20	12	9	7.9	PP3W
Mannix	112092002	20	12	9	130.5	Range
Forestland	**2,545.8**	**Rangeland**	**537.7**	**Total**	**3,083.5**	
Nature Conservancy	312090501	5	12	9	68.0	DF1P
Nature Conservancy	312090502	5	12	9	88.3	DF1W
Nature Conservancy	312090503	5	12	9	28.9	DF1W
Nature Conservancy	312090504	5	12	9	54.8	DF1P
Nature Conservancy	312090505	5	12	9	387.3	DF1P
Nature Conservancy	312090701	7	12	9	62.2	DF1P
Nature Conservancy	312090702	7	12	9	464.5	DF1P
Nature Conservancy	312090901	9	12	9	342.4	DF2M
Nature Conservancy	312091701	17	12	9	56.3	DF2W
Nature Conservancy	312031702	17	12	10	375.0	DF1W
Nature Conservancy	312031703	17	12	10	201.3	DF1P
Forestland	**2,129.0**	**Rangeland**	**0**	**Total**	**2,129.0**	

DF1P – Douglas Fir Seedling/Sapling Stand Poorly Stocked (less than 500 seedling/saplings per acre)

The following table demonstrates the stocking level for the typical DF1P Stand.

Stocking Table
Tree per Acre
By Species and DBH
DF1P

DBH	Black Cottonwood	Ponderosa pine	Douglas-fir
0"	0	0	188
1-5"	0	18	75
6-7"	0	7	4
8-11"	0	1	5
12-15"	0	2	1
16-19"	0	1	1
20" plus	1	0	0
Total	**1**	**29**	**274**



The Nature Conservancy		Mannix Ranch	
Stand	**Acres**	**Stand**	**Acres**
312090501	68.0	112090401	1208.7
312090504	54.8	112090801	147.8
312090505	387.3	112090802	183.5
312090701	62.2	112090201	84.6
312090702	464.5		
312031703	201.3		
Total	**1238.1**		**1624.6**

Stand Description

This is the most common stand type found on the subject properties. The type is typically found on the west and south facing aspects adjacent to major streams and near drainages. The topography is generally moderate to very steep with slopes ranging from 20-70%; however, the average slope is between 25-45%. Most stands have naturally regenerated following harvests that occurred within the past two decades. Tree distribution in all size classes is often clumpy. There tend to be few merchantable-sized trees in the forest overstory due to past harvest practices. Stands of this type on the Mannix Ranch are located on the steeper topography near the upper portion of Buffalo Gulch and California Gulch. Stands on The Nature Conservancy

Ownership tend to be located on more moderate topography near Clear Creek and Buffalo Gulch.

This stand type has scattered pockets of Douglas-fir and ponderosa pine seedlings and saplings. Douglas-fir is the dominant regeneration tree with a secondary component of ponderosa pine and lodgepole pine found in some stands. Few insect or disease problems were noted in this stand type.

The distribution of the regeneration component tends to be clumpy. On the drier and steeper sites, the stocking of the regeneration is poor to absent due to the limited soil moisture. Grass tends to dominate these openings on more moderate topography with southern exposures. Management of the seedling/sapling size class should receive emphasis in this stand type to encourage forest productivity over the long-term.

Scattered overstory trees are present in these stands on the steeper slopes; however, the quality of pole and sawlog-sized trees tends to be marginal to poor. These trees are predominately Douglas-fir with some ponderosa pine present but not common. Most trees in these size classes are in poor to fair condition though there are lightly scattered individual trees in good to excellent condition. Merchantable timber volume averages less than 1.0 MBF per acre in most stands.

Management Recommendations

Pre-commercial thinning within the next decade is recommended in this stand type on the most productive sites. Less productive sites should be monitored and may require thinning in the following 10 to 20 years. Stands to be prioritized for treatment should have good road access, moderate topography and deep soils. Stands on drier aspects (south and west slopes) with slopes of greater than 50% should receive less management emphasis due to limited forest productivity and the cost associated with management. Pre-commercially thinning larger patches of good quality trees will improve or maintain tree growth rates, as well as tree health and vigor. Livestock grazing is likely to receive higher management emphasis on slopes of less than 40%.

Healthy ponderosa pine and lodgepole pine should receive emphasis for retention over Douglas-fir where possible to improve tree species diversity in these stands. Retention trees should be disease free, have straight stems, and a crown ration of greater than 35%. Target spacing for retention trees is 15-20 feet apart, resulting in a desired stocking rate of approximately 110-200 trees per acre.

Wider tree spacing is recommended on drier sites (south and west slopes), where ponderosa pine increases in abundance, and where grass production for livestock grazing may rank higher as a management objective. Spacing of the leave trees should be increased to 20 to 25 feet to reduce forest canopy cover. Tighter tree spacing is recommended on productive soils located near stream bottoms, moister aspects and on moderate topography. A target tree spacing of 15 to 18 feet is desired on this type of site.

There are several slash disposal methods associated with the pre-commercial thinning. Slash disposal is recommended to reduce fire hazard following pre-commercial thinning treatments. Lopping and scattering cut limbs and stems to within 2 feet of the ground is the least expensive option for reducing the fire hazard. In areas where slash accumulations may become excessive hand piling and burning of slash accumulations is recommended. Labor costs associated with piling and burning will increase per acre cost for this treatment over lopping and scattering. Mechanical slash piling is more efficient and less costly than hand piling on slopes less than 35%. Mechanical thinning and slash grinding can be economical on slopes of less than 30%. Hand piling and burning is recommended on slopes greater than 40% where use of mechanical equipment if limited due to safety and environmental concerns.

During the pre-commercial thinning process, retention of small dense thickets, ranging from ¼ to 3 acres in size is encouraged near stream courses, wetlands, benches and ridge tops to provide hiding and thermal cover for wildlife. Avoid burning or grinding large diameter (greater than 12 inches diameter) down logs in these stands especially when located within 100 feet of a stream or wetland.

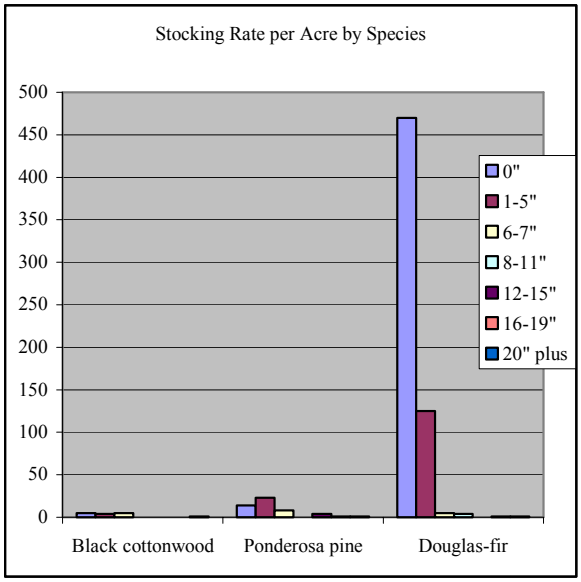
Healthy pole and sawlog-sized trees should be retained to provide forest structure and wildlife habitat. Most pole and sawlog-sized trees are in poor to fair condition with poor genetic attributes and high stem defect. These trees should be harvested where economically feasible. Large diameter trees (greater than 12 inches diameter) with broken tops or significant stem decay should be retained as snag recruits and for wildlife habitat. Retention of these trees is especially significant near riparian and wetland areas. All live and dead black cottonwood and aspen trees should be retained.

DF1M – Douglas Fir Seedling/Sapling Stand Moderately Stocked (500-1,000 seedling/saplings per acre)

The following table demonstrates the stocking level for the typical DF1M Stand.

Stocking Table
Tree per Acre
By Species and DBH
DF1M

DBH	Black cottonwood	Ponderosa pine	Douglas-fir
0"	5	14	470
1-5"	4	23	125
6-7"	5	8	5
8-11"	0	0	4
12-15"	0	4	0
16-19"	0	1	1
20" plus	1	1	1
Total	**15**	**51**	**606**



The Nature Conservancy		Mannix Ranch	
Stand	**Acres**	**Stand**	**Acres**
312090901	342.2	112090301	59.7
		112090402	151.8
Total	**342.2**		**211.5**

Stand Description

This forest type is most common on south facing aspects although the type is present on all aspects. The topography is variable with slopes ranging from 0-60%, with an average of approximately 35%. Most stands have had the majority of the merchantable overstory harvested within the past several decades. This stand type has moderately abundant seedling and sapling Douglas-fir regeneration with a secondary component of ponderosa pine and lodgepole pine. Tree distribution is often clumpy with dense thickets present. Management of the seedling/sapling size class should receive emphasis to encourage forest productivity. Douglas-fir stands of this type generally establish on sites with moderate to good site productivity. Few insect or disease problems were noted in this stand type. Thickets of sapling and pole-sized trees require thinning to reduce fire hazard and lessen competition between trees.

Uneven-aged management, in this stand type, is encouraged over the long term to develop the presence of several different size and age classes. An important objective in this stand type is to increase the relative abundance of mature ponderosa pine and lodgepole pine. Once these stands

mature, a harvest schedule allowing an entry every 10 to 30 years will be possible. During each entry approximately ¼-1/3rd of the total standing merchantable volume can be removed. Widely spaced even-aged stands are encouraged if western spruce budworm outbreaks become a management issue in areas dominated by Douglas-fir.

Scattered pole and sawlog-sized trees are often present. However, most trees in these size classes are in poor to fair condition. Merchantable timber volume averages less than 1.0 MBF per acre in most stands. Mature and over-mature Douglas-fir and ponderosa pine often have a high percentage of defect.

Management Recommendations

Pre-commercial thinning within the next 10 years is recommended in this stand type. Stand stocking rates should be reduced when the stocking of sapling and pole-sized trees exceeds 300 trees per acre. Target spacing for retention trees is 12-18 feet apart, resulting in a stocking rate of 135-300 trees per acre. Healthy ponderosa pine and lodgepole pine should receive emphasis for retention over Douglas-fir where possible to improve tree species diversity in these stands. Retention trees should be disease free, have straight stems, and a crown ratio of greater than 35%.

Wider spacing is recommended on drier sites and where livestock grazing is a management emphasis. Increasing tree spacing within 100 feet of roadsides will enhance the utility of roads as wildfire fuel breaks. If a fuel break is desired tree crowns should separated by a minimum distance of 10 feet. Pruning the lower limbs of retention trees near roadsides will further reduce the fire hazard. Livestock grazing is likely to receive higher management emphasis on slopes of less than 40%. Tighter spacing is recommended on productive soils located near stream bottoms, moister aspects and on moderate topography. Spacing between trees in some areas can be clumped and uneven, leaving small forest openings, as well as groups of more tightly spaced trees for wildlife hiding and thermal cover.

Slash disposal associated with pre-commercial thinning may include lopping and scattering limbs to within 2 feet of the ground where slash accumulations are light. Hand piling and burning of slash accumulations is recommended on slopes greater than 40%. Mechanical slash piling is likely to be cost effective on slopes less than 20%. Mechanical thinning and slash grinding may be economical on slopes of less than 30%. Retention of small dense thickets, ranging from ¼ to 5 acres in size is encouraged near stream courses, wetlands, benches and ridge tops to provide hiding and thermal cover for wildlife. Avoid burning or grinding large diameter (greater than 12 inches diameter) down logs in these stands especially when located within 100 feet of a stream or wetland.

Healthy pole and sawlog-sized trees should be retained to provide forest structure and wildlife habitat. Most pole and sawlog-sized trees are in poor to fair condition with poor genetic attributes and high stem defect. These trees should be harvested where economically feasible. Large diameter trees (greater than 12 inches diameter) with broken tops or significant stem decay should be retained as snag recruits and for wildlife habitat. Retention of these trees is especially significant near riparian and wetland areas. All black cottonwood and aspen trees should be retained.

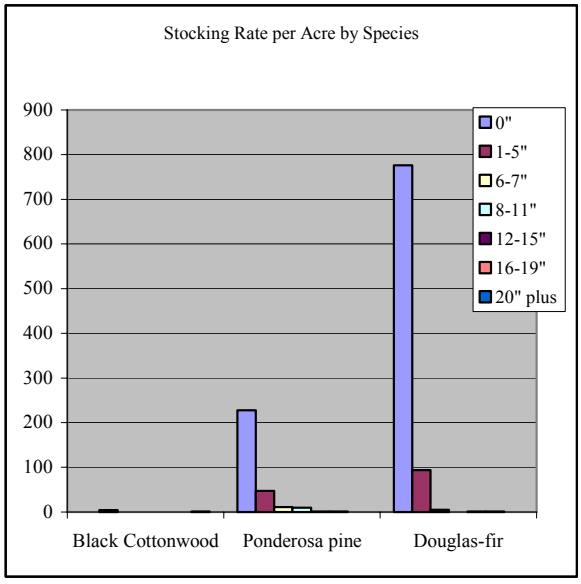
Scattered pole and sawlog-sized trees are often present in this stand type. However, most trees in these size classes are in poor to fair condition. Thickets of sapling and pole-sized trees will require thinning to reduce fire hazard and competition between trees. Merchantable timber volume averages less than 2.0 MBF per acre in most stands. Currently, the mature and over-mature Douglas-fir and ponderosa pine are often highly defective.

DF1W – Douglas-fir Seedling/Sapling Stand Well Stocked (less than 1,000 seedling/saplings per acre)

The following table demonstrates the stocking level for the typical DF1W Stand.

Stocking Table
Tree per Acre
By Species and DBH
DF1W

DBH	Black Cottonwood	Ponderosa pine	Douglas-fir
0"	0	228	776
1-5"	4	47	94
6-7"	0	11	5
8-11"	0	10	0
12-15"	0	1	1
16-19"	0	1	1
20" plus	1	0	0
Total	**5**	**298**	**877**



The Nature Conservancy		Mannix Ranch	
Stand	**Acres**	**Stand**	**Acres**
312090502	88.3		
312090503	28.9		
312091701	56.3		
312031702	375.0		
Total	**548.5**		**0**

Stand Description

This stand type is most common on east and south facing aspects. Topography is generally moderate with slopes ranging from 0-45%. Slopes in most areas average less than 40%. Most stands have had the majority of the merchantable overstory harvested within the past several decades. This stand type has over-abundant seedling and sapling Douglas-fir regeneration with a secondary component of ponderosa pine and lodgepole pine. Tree distribution is often clumpy with dense thickets common. Management of the seedling/sapling size class should receive

emphasis to encourage forest productivity. Douglas-fir stands of this type generally establish on sites with good site productivity. Few insect or disease problems were noted in this stand type.

In many areas uneven-aged management is encouraged over the long term to develop the presence of several different size and age classes. Widely spaced even-aged stands are encouraged if western spruce budworm outbreaks become a management issue. Thickets of sapling and pole-sized trees require thinning to reduce fire hazard and competition between trees.

Scattered pole and sawlog-sized trees are often present. However, most trees in these size classes are in poor to fair condition. Merchantable timber volume averages less than 1.0 MBF per acre in most stands. Mature and over-mature Douglas-fir and ponderosa pine often have a high percentage of defect.

Management Recommendations

Pre-commercial thinning within the next 5 years is recommended in this stand type. Stand stocking rates should be reduced when the stocking of sapling and pole-sized trees exceeds 300 trees per acre. Target spacing for retention trees is 12-18 feet apart, resulting in a stocking rate of 135-300 trees per acre. Healthy ponderosa pine and lodgepole pine should receive emphasis for retention over Douglas-fir where possible to improve tree species diversity in these stands. Retention trees should be disease free, have straight stems, and a crown ratio of greater than 35%.

Wider spacing is recommended on drier sites and where livestock grazing is a management emphasis. Increasing tree spacing within 100 feet of roadsides will enhance the utility of roads as wildfire fuel breaks. If a fuel break is desired tree crowns should separated by a minimum distance of 10 feet. Pruning the lower limbs of retention trees near roadsides will further reduce the fire hazard. Livestock grazing is likely to receive higher management emphasis on slopes of less than 40%. Tighter spacing is recommended on productive soils located near stream bottoms, moister aspects and on moderate topography. Spacing between trees in some areas can be clumped and uneven, leaving small forest openings, as well as groups of more tightly spaced trees for wildlife hiding and thermal cover.

Slash disposal associated with pre-commercial thinning may include lopping and scattering limbs to within 2 feet of the ground where slash accumulations are light. Hand piling and burning of slash accumulations is recommended on slopes greater than 40%. Mechanical slash piling is likely to be cost effective on slopes less than 20%. Mechanical thinning and slash grinding may be economical on slopes of less than 30%. Retention of small dense thickets, ranging from ¼ to 5 acres in size is encouraged near stream courses, wetlands, benches and ridge tops to provide hiding and thermal cover for wildlife. Avoid burning or grinding large diameter (greater than 12 inches diameter) down logs in these stands especially when located within 100 feet of a stream or wetland.

Healthy pole and sawlog-sized trees should be retained to provide forest structure and wildlife habitat. Most pole and sawlog-sized trees are in poor to fair condition with poor genetic attributes and high stem defect. These trees should be harvested where economically feasible. Large diameter trees (greater than 12 inches diameter) with broken tops or significant stem decay

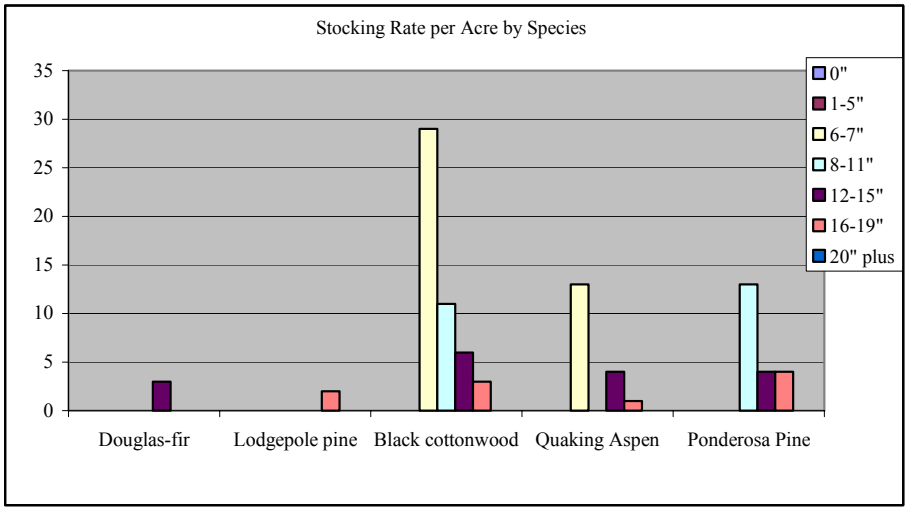
should be retained as snag recruits and for wildlife habitat. Retention of these trees is especially significant near riparian and wetland areas. All black cottonwood and aspen trees should be retained.

HX2P – Hardwood Associations, Poorly Stocked

The following table demonstrates the stocking level for the typical HX2P Stand.

Stocking Table
Tree per Acre
By Species and DBH
HX2P

DBH	Douglas-fir	Lodgepole pine	Black cottonwood	Quaking Aspen	Ponderosa Pine
0"	0	0	0	0	0
1-5"	0	0	0	0	0
6-7"	0	0	29	13	0
8-11"	0	0	11	0	13
12-15"	3	0	6	4	4
16-19"	0	2	3	1	4
20" plus	0	0	0	0	0
Total	**3**	**2**	**49**	**18**	**21**



The Nature Conservancy		Mannix Ranch	
Stand	**Acres**	**Stand**	**Acres**
		112091502	29.9
Total	**0**		**29.9**

Stand Description

This cover type occurs within rangeland habitats where relatively isolated stands of aspen are present and along the stream bottom associated with Jefferson Creek where a large contiguous stand is present. The coniferous trees found in these stands are generally considered encroachment. The topography is slight to moderate with some steep areas near drainage bottoms. Slopes in most areas average less than 15%.

Management Recommendations

This is the only forest type that includes a significant component of deciduous trees such as aspen and black cottonwood. These stand type has have several attributes that warrant special consideration. Stand attributes include a multi-layered forest structure, presence of large diameter hardwood snags and down logs, presence of tall shrubs and a relatively dense canopy cover. Generally surface or ground water is present. Correspondingly, these stands receive extensive use from wildlife who favor the diversity of this habitat versus the relatively homogeneous conifer dominated landscape on nearby lands. Maintenance of these stands is a valid management goal from a wildlife perspective due to the fact that many of the habitat features found within the stands are relatively scarce on adjoining lands.

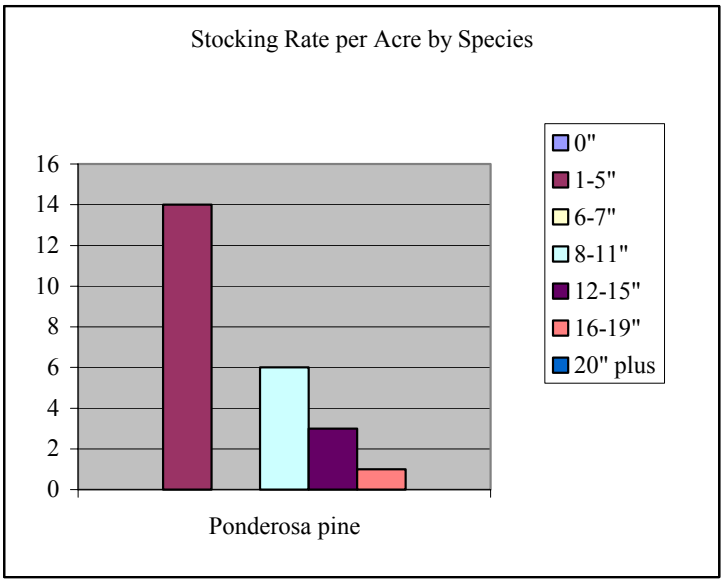
The abundance of natural reproduction of seedlings and saplings should be closely monitored in this stand type to ensure a younger age class of trees is well represented. In some stands regeneration is lacking. Livestock use should be monitored to determine if young trees are being detrimentally impacted by browsing and trampling. Establishment of physical barriers such as fences or slash may discourage livestock and wildlife from using areas vulnerable to browsing, rubbing and trampling.

A management approach where the hardwoods are maintained in a multi-layered forest structure is recommended. This approach would remove all encroaching conifers to favor shade deciduous trees and shrubs establishing in the understory and on the edges of clumps. If Douglas-fir becomes more common in these stands hardwoods will decrease in abundance due to increased shade. Cutting of over mature aspen trees will encourage sprouting where regeneration is lacking.

PP1P– Ponderosa pine/Sapling Stand Poorly Stocked (less than 500 seedling/saplings per acre)

The following table demonstrates the stocking level for the typical PP1P Stand.

Stocking Table Tree per Acre By Species and DBH Stand 112090901	
DBH	**Ponderosa pine**
0"	0
1-5"	14
6-7"	0
8-11"	6
12-15"	3
16-19"	1
20" plus	0
Total	**24**



The Nature Conservancy		Mannix Ranch	
Stand	**Acres**	**Stand**	**Acres**
		112091503	231.9
Total	**0**		**231.9**

These stands are found primarily on south and east facing slopes, with some west slopes present. Topography is variable with slopes averaging from 0-60%. These stands are grassland community types with some encroaching Douglas-fir and ponderosa pine seedlings and saplings. There are widely scattered large diameter ponderosa pine and Douglas-fir. Domestic livestock heavily graze these stands. The seedling and saplings present are in small clumps.

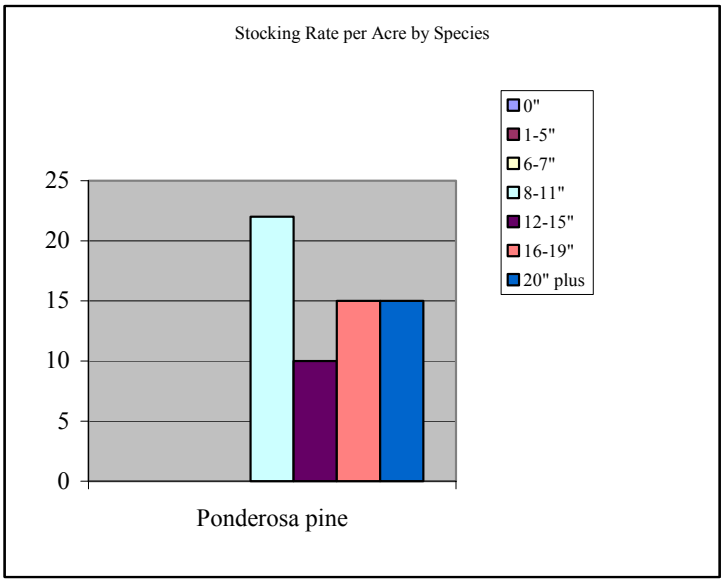
Management recommendations

These stands generally include trees that are encroaching into traditional rangelands. Management activities are focused on maintaining rangelands versus allowing the forest stands to develop. Native bunchgrasses, shrubs and forbs can be maintained over the tong term by controlling the encroachment. In the next decade, it will be necessary to hand thin encroaching conifers with lopping and scattering of the slash.

PP3W– Ponderosa pine Medium to Large Sawlog, Well Stocked

The following table demonstrates the stocking level for the typical PP3W Stand.

Stocking Table Tree per Acre By Species and DBH PP3W	
DBH	**Ponderosa pine**
0"	0
1-5"	0
6-7"	0
8-11"	22
12-15"	10
16-19"	15
20" plus	15
Total	**62**



The Nature Conservancy		Mannix Ranch	
Stand	**Acres**	**Stand**	**Acres**
		112092001	7.9
Total			**7.9**

Stand Description

This forest type is found in section 20. The aspect is generally south, but the stand is primarily an isolated pocket of timber found on the ridge top. The topography is slight with some steeper areas. The average slope is less than 10%. The stand is well stocked with medium to large size sawtimber.

Ponderosa pine is the dominant tree species in the stand. Some ponderosa pine over 20 inches in diameter is present in the stand. The forest structure is single to multi-layered and moderately dense. Large diameter, standing dead trees are present within the stand. Pole and small sawlog-sized ponderosa pine are common in the forest understory. The stand provides good thermal and hiding cover for wildlife.

Management Recommendations

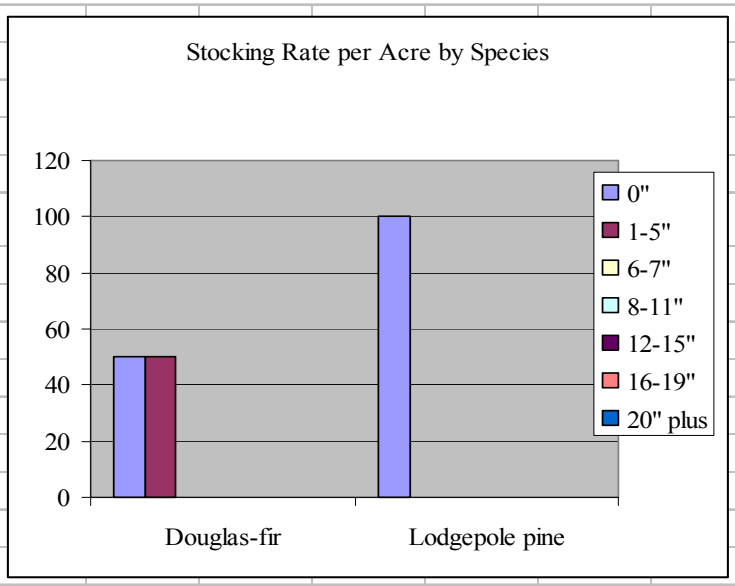
Because of the uniqueness of this forest type, managing this stand to maintain forest health is the primary concern. This type of management will allow for cultural treatments over time; however, thinning from below is the main treatment recommended. Harvest activities will remove poor quality small sawlogs and retain the biggest and best trees in the stand.

Slash disposal associated with thinning from below will likely include whole tree skidding to roadside landings with ground based logging machinery. Temporary roads may need to be constructed to provide access for logging machinery and trucks.

All large diameter trees greater than 12 inches diameter with broken tops or significant stem decay should be retained as snag recruits and for wildlife habitat. Retention of these trees is especially significant near the edges of this stand.

LP1P– Lodpepole pine Sapling Stand Poorly Stocked (less than 500 seedling/saplings per acre)

Stocking Table		
Tree per Acre		
By Species and DBH		
LP1P		
DBH	Douglas-fir	Lodgepole pine
0"	50	100
1-5"	50	0
6-7"	0	0
8-11"	0	0
12-15"	0	0
16-19"	0	0
20" plus	0	0
Total	**100**	**100**



The Nature Conservancy		Mannix Ranch	
Stand	**Acres**	**Stand**	**Acres**
		112090403	32.2
Total	**0.0**		**32.2**

Stand Description

There is only one stand of this type located on the Mannix Ranch. It is located on the north boundary of Section 4 at approximately 5,500 elevation. The topography is generally moderate. This stand type includes Douglas-fir seedlings and saplings. The majority of lodgepole

regeneration is in the seeding size class. Management of seedling/sapling size class tree should receive emphasis in this stand type to encourage forest productivity over the long-term.

Management Recommendations

Pre-commercial thinning within the next decade is recommended in this stand type in crowded portions of the stand. Pre-commercially thinning larger patches of good quality trees will improve or maintain tree growth rates, as well as tree health and vigor.

Healthy lodgepole pine should receive emphasis for retention over Douglas-fir where possible to improve tree species diversity in these stands. Retention trees should be disease free, have straight stems, and a crown ration of greater than 35%. Target spacing for retention trees is 9-12 feet apart, resulting in a desired stocking rate of approximately 300 -535 trees per acre.

There are several slash disposal methods associated with the pre-commercial thinning. Slash disposal is recommended to reduce fire hazard following pre-commercial thinning treatments. Lopping and scattering cut limbs and stems to within 2 feet of the ground is the least expensive option for reducing the fire hazard. In areas where slash accumulations may become excessive hand piling and burning of slash accumulations is recommended. Labor costs associated with piling and burning will increase per acre cost for this treatment over lopping and scattering. Mechanical slash piling is more efficient and less costly than hand piling on slopes less than 35%. Mechanical thinning and slash grinding can be economical on slopes of less than 30%. Hand piling and burning is recommended on slopes greater than 40% where use of mechanical equipment if limited due to safety and environmental concerns.

Dense lodgepole clumps may provide good hiding cover for elk and may be retained if such use is noted during site visits. During the pre-commercial thinning process, retention of small dense thickets, ranging from ¼ to 3 acres in size is encouraged near stream courses, wetlands, benches and ridge tops to provide hiding and thermal cover for wildlife. Avoid burning or grinding large diameter (greater than 12 inches diameter) down logs in these stands especially when located within 100 feet of a stream or wetland.

Range Areas - Predominately Grass and Sagebrush Dominated Range and Pasture Lands

The Nature Conservancy		Mannix Ranch	
Stand	**Acres**	**Stand**	**Acres**
		112090901	127.6
		112091002	279.6
		112092002	130.5
Total	**0**		**537.7**

Stand Description

Grass and sagebrush dominated range plant communities are interspersed throughout the subject ownerships. This information is provided to supplement the forest inventory conducted within forested stands on the subject property.